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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,203	06/20/2003	Grant M. Kloster	42P17058	8820

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EXAMINER

NGUYEN, KHIEM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 02/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/600,203

Applicant(s)

KLOSTER ET AL.

Examiner

Khiem D Nguyen

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 18-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 26-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-17 and 26-29 in Paper No. December 11th, 2003 is acknowledged. As such, applicants elect to withdrawn Group II claims 18-25 drawn to a stacked microelectronic device.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3 and 5-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakao et al. (U.S. Patent 6,452,650).

In re claim 1, Nakao discloses a method of forming a stacked device filler, comprising (col. 16, line 23 to col. 17, line 13 and **FIGS. 1-42**): forming a first layer of material (**FIG. 1: 13**) between two or more substrates (**FIG. 1: 11**) of a stacked device; forming a second layer (**FIG. 1: 14**) of material between the two or more substrates of the stacked device, wherein the second material causes a reaction in at least a portion of the first layer of material (col. 16, line 65 to col. 17, line 13 and **FIGS. 1-3**).

In re claim 2, Nakao discloses wherein the reaction comprises polymerization (col. 16, line 65 to col. 17, line 22 and **FIGS. 1-3**).

In re claim 3, Nakao discloses wherein forming a first layer comprises diffusing a first material (**FIG. 1: 13**) between at least a portion of the two or more substrates (**FIG. 1: 11**) of the stacked device (col. 16, lines 23-34).

In re claim 5, Nakao discloses wherein forming a first layer comprises one or more of: injection, spraying, and immersion (col. 16, line 23 to col. 17, line 13).

In re claim 6, Nakao discloses wherein forming the second layer diffusing a second material between at least a portion of the two or more substrates of the stacked device (col. 17, lines 6-13).

In re claim 7, Nakao discloses wherein the material comprises one or more of: water (col. 16, line 65 to col. 17, line 13).

In re claim 8, Nakao discloses wherein forming a second layer comprises one or more of: injection, spraying, and immersion (col. 17, lines 6-13).

In re claim 9, Nakao discloses wherein the reaction results in the production of a polymer foam (col. 16, line 65 to col. 17, line 23).

3. Claims 10-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakao et al. (U.S. Patent 6,452,650).

In re claim 10, Nakao discloses a method of forming a stacked semiconductor device, comprising (col. 16, line 23 to col. 17, line 13 and **FIGS. 1-42**): forming one or more layers of material (**FIG. 1: 13**) on at least portions of the top surface of a substrate (**FIG. 1: 11**), the substrate having one or more interconnect structures formed thereon (**FIG. 1: 12**), the interconnect structures each have a top surface; selectively removing at least a portion of the one or more layers of material; assembling the substrate into a

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stacked semiconductor device (col. 34, line 47 to col. 36, line 23 and **FIGS. 26 (a)-(d)**); and causing a reaction in at least a portion of the one or more layers of material (col. 16, line 24 to col. 17, line 23 and **FIGS. 1-3**).

In re claim 11, **Nakao** discloses wherein the reaction comprises polymerization (col. 16, line 65 to col. 17, line 22 and **FIGS. 1-3**).

In re claim 12, the process of spin coating layers of material on surface of a substrate is well-known to one of ordinary skill in the art of making semiconductor devices.

In re claim 13, **Nakao** discloses wherein the material layer is spin coated to a thickness greater than the top surface of the one or more interconnect structures (**FIG. 1**).

In re claim 14, **Nakao** discloses wherein the selective removing comprises one or more of: chemical etch, dry etch, and mechanical etch (col. 36, lines 17-23).

In re claim 15, **Nakao** discloses wherein the material layer is selectively removed such that the material is removed from the top surface of one or more interconnect structures (**FIG. 26(d)**).

In re claim 16, **Nakao** discloses wherein the material comprises one or more of: water (col. 16, line 65 to col. 17, line 13).

In re claim 17, **Nakao** discloses wherein the reaction results in the production of a polymer foam (col. 16, line 65 to col. 17, line 23).

4. Claims 26-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakao et al. (U.S. Patent 6,452,650).

In re claim 26, Nakao discloses a method of forming a stacked device filler, comprising (col. 16, line 23 to col. 17, line 13 and **FIGS. 1-42**): forming a layer of material (**FIG. 1: 13**) between two or more substrates (**FIG. 1: 11**) of a stacked device; and causing a reaction in at least a portion of the layer of material, wherein the reaction results in at least a portion of the layer of material increasing in size (col. 16, line 65 to col. 17, line 13 and **FIGS. 1-3**).

In re claim 27, Nakao discloses wherein the reaction comprises polymerization (col. 16, line 65 to col. 17, line 22 and **FIGS. 1-3**).

In re claim 28, Nakao discloses wherein forming the material comprises one or more of: immersion, injection, and spraying (col. 16, line 23 to col. 17, line 13).

In re claim 29, Nakao discloses wherein the reaction results in the production of a polymer foam (col. 16, line 65 to col. 17, line 23).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakao et al. (U.S. Patent 6,452,650) as applied to claims 1-3 and 5-9 above, and further in view of Sugino et al. (U.S. Patent 5,087,664).

In re claim 4, Nakao does not explicitly disclose wherein the material comprises one or more of: diisocyanate monomers, a diisocyanate end-capped compliant oligomer, and p-toluesulfonyl semicabazide.

Sugino discloses providing a first layer of material comprises diisocyanate monomer and a second layer of material wherein the second material causes a reaction in at least a portion of the first layer of material wherein the reaction comprises polymerization (col. 4, line 58 to col. 5, line 4). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of Nakao and Sugino to enable the polymerization reaction of Nakao be performed and furthermore to provide an undercoating material composed essentially of such a plastisol composition containing an adhesion-imparting agent having good storage stability and being capable of firmly bonding to a electro-deposited metal in a short period of time within a wide temperature range from a relatively low temperature to a high temperature (col. 2, lines 53-51).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (571) 272-1985. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).

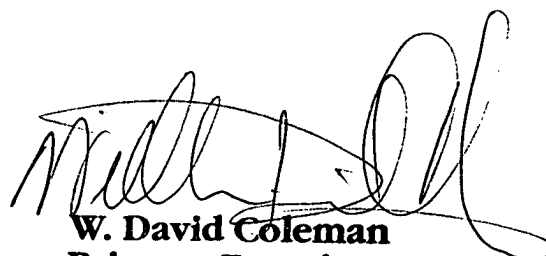
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (571) 272-1855. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.N.

January 29, 2004



W. David Coleman
Primary Examiner